United States Department of Agriculture
Forest Service
Southern Forest Experiment Station

Research Note

SO-292
May, 1983

Site Preparation Costs in the Southern Coastal Plain — An Update

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INTRODUCTION

Landowners who want to regenerate their land following timber harvest need up-to-date costs for sound assessment of alternative site preparation methods. The first survey of southern costs was conducted in 1952 by Worrell (1953). Periodic updates since then have gradually expanded the cost categories reported. A major expansion of cost categories for site preparation was launched in 1979, reported by Moak, Watson, and Van Deusen (1980). This note presents 1980 costs as an interim update and partial verification of that series for four southern coastal plain states.

Site preparation treatments used on forest industry land and national forests in the upper and lower coastal plain of South Carolina, Alabama, Mississippi, and Louisiana were examined. Costs were gathered from 126 contracts covering more than 16,000 acres prepared for planting during 1980. These costs have been summarized in a form comparable to the 1979 average costs for the "Southern Coastal Plain" reported by Moak, Watson and Van Deusen (1980).

Landowners can choose from a number of different site preparation options. Some options use only one type of treatment per site, other options use more. Analysis of the site preparation agreements associated with 85 planting contracts showed that 7 individual site preparation treatments were contracted either alone or in 14 different combinations (tables 1 and 2). Additional site preparation contracts were collected for areas planted by national forest or company employees, and also for areas where a complete string of preparation procedures could not be identified. This expanded considerably the number of contracts for cost analysis (table 3).

Shearing or injecting with herbicides those trees which remain on the site after harvest are the two procedures most widely used to reduce competition from overstory vegetation. Shearing was used 51 percent of the time, most often as the first in a series of intensive, heavily-mechanized treatments. Injection was the initial procedure in 35 percent of the cases, as a part of less-intensive, less mechanized site preparation.

There were 54 contracts let for shearing, covering 9,400 acres. The average cost was $52.38 per acre,

Table 1.—*Relative popularity of individual site preparation treatments on contract-planted areas in the southern coastal plain, 1980*

Treatment	Percentage of Contracts
Shearing	51
Burning	49
Injecting	35
Raking	26
Bedding	25
Chopping	19
Disking	2

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Table 2.—*Relative popularity of site preparation treatment combinations on contract-planted areas in the southern coastal plain, 1980*

Treatment combination	Number of contracts
Burn and inject	17
Shear, rake and bed	10
Inject only	9
Shear and rake	9
Shear, burn, and bed	7
Burn only	5
Chop only	5
Shear, chop, and burn	4
Chop and burn	2
Chop and inject	2
Shear only	2
Shear and burn	2
Shear, chop, bed, and burn	2
Shear and disk	2
Shear and inject	2
Shear, rake and burn	2
Rake only	1
Shear and bed	1
Shear, chop, and bed	1

with two-thirds of the contracts falling between $40 and $65 per acre. Costs were dependent upon the treatments used after shearing. When chopping followed, shearing costs were always less than $42.50 per acre, averaging $32. But shearing never cost less than $50 when bedding, burning, disking, or raking followed. With chopping as the next treatment, the material sheared was either small or widely scattered across the site. Also, when chopping followed shearing, the sheared material was rarely piled into windrows. These factors contributed to fast and easy shearing, resulting in a low cost per acre.

Injection of residual trees with herbicides cost an average of $32.83 per acre (table 3). Some of the contracts in this category also permitted the use of clearing saws on small diameter stems rather than injection. Therefore, in a few instances, saws were used to fell small pines while hardwoods were injected. The injection costs reported include the cost of chemicals.

Raking following shearing was widely used. Of the total acreage sheared, 60 percent was also raked. The combined average cost of the two procedures was $95.52 per acre (table 3). Raking alone cost $43 per acre. The 1980 combined cost represented only a 5.4 percent increase over the average 1979 cost for the southern coastal plain. This rate of increase is but two-thirds the 8.26 percent annual rate of increase in mechanical site preparation in the southern coastal plain from 1976 to 1979 (Moak 1982). Moderating fuel prices were probably the major factor contributing to the slowdown.

Chopping was primarily used as an initial treatment on national forests, while industry usually chopped following shearing as an alternative to raking. The average chopping costs was $44.03 per acre, while that of shearing and chopping combined was $76. Disking was rarely used by either the forestry companies or the government, even though it is commonly thought of as an alternative to chopping.

Broadcast burning is the major site preparation method used for controlling competition from understory vegetation—grasses, forbs, and shrubs. It was used nearly half of the time, at an average cost to industry of $3.58 per acre. Forest Service records do not permit breaking out a comparable cost of burning on the national forests.

Bedding is another site preparation practice more widely used by industry than by the Forest Service. Only the wettest sites on the national forests are bedded, as a method to improve soil aeration in the seedling root zone. Forest products companies bed for this purpose, too, but also for competition control, even on very sandy sites. Land managers

Table 3.—*Comparison of 1979 and 1980 per acre site preparation costs for the southern coastal plain*

Treatment	Number of contracts	1979 average costs[1]	1980 average costs
Shearing and raking	40	$90.65	$95.52 ($77.11–$113.92)[2]
Chopping	26	$38.14	$44.03 ($37.09–$50.96)
Injecting herbicides	20	$40.23	$32.83 ($24.88–$37.22)
Bedding	20	$21.31	$17.38 ($15.45–$19.31)
Burning after preparation	20	$ 3.20	$ 3.58 ($2.86–$4.30)

[1]Moak, Watson, and Van Deusen (1980).

[2]The figures in parentheses are confidence intervals. The true 1980 average cost for the practice would fall in the cost range 95 times out of 100.

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should pay close attention to the level of bedding benefits anticipated. Will bedding sites that are not wet and poorly aerated yield $17.38 per acre (the cost of bedding) in terms of improved growth and yield from competition control?

With the exception of herbicide injection, which has been included in all the cost surveys since 1952, every other treatment shown in table 3 was reported separately for the first time in 1979. There is no statistically significant difference between the 1979 and 1980 costs of shearing and raking, chopping, or burning after site preparation (the 1979 averages all fall within the 95 percent confidence interval for the 1980 averages, (table 3). For both injection and bedding, however, the 1980 costs are significantly lower than the 1979 estimates. Part of the reason for this decline may be that a weighted average 1979 injection cost for the southern coastal plain alone was not available. Thus, the 1979 weighted average for the entire South was used for the comparison figure.

Forest managers planning site preparation operations for the spring and summer of 1983 should boost the 1980 costs reported in table 3 by 21 percent to account for inflation and adjust them to anticipated 1983 levels. The resulting 1983 cost estimates can then be compared to bid prices received to help determine if the bid price is reasonable. If the bid price lies beyond the high end of the average cost range, the difficulty of the job should be carefully examined when deciding whether or not to accept the bid. Managers should pay especially close attention to bedding and injection costs, which seem to vary more year to year than do those of other mechanical treatments. Careful evaluation of anticipated site preparation expense will help assure more profitable decisions.

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